

A radio communication system is known from WO 03/063526 A1 in which parameters of transmitting channels are ascertained in a first station and transmitted by radio to a second station.

This object is achieved by a method according to Claim 1 and also by a receiver station and a sending station according to the subsidiary claims. Advantageous embodiments and developments of the invention are set down in dependent claims.

The method for operating a radio communication system makes provision whereby a receiver station receives a signal by way of a first transmitting channel from a sending station. A channel parameter of the first transmitting channel is determined by the receiver station. A parameter of at least one determined first data symbol which is to be transmitted from the receiver station to the sending station by way of a second transmitting channel is adjusted as a function of the channel parameter for the communication of the channel parameter of the first transmitting channel to the sending station.

The channel parameter of the first transmitting channel corresponds to an item of information about the first transmitting channel. In this situation, this can for example be a phase parameter, in other words information about a phase shift occurring as a result of the transmission by way of the first transmitting channel, or it can also be an amplitude parameter, in other words an amplitude attenuation occurring as a result of the transmission by way of the first transmitting channel. The channel parameter of the first transmitting channel can be advantageously ascertained by the receiver station carrying out a channel estimate for the first

transmitting channel. Methods for channel estimation are common knowledge to the person skilled in the art. Channel estimates can be carried out for example by correlating received pilot symbols with versions of the pilot symbols stored in the receiver station.

## Claims

1. Method for operating a radio communication system, whereby
  - a receiver station (MS) receives a signal (S1) by way of a first transmitting channel (C1) from a sending station (BS),
  - a channel parameter (P) of the first transmitting channel (C1) is determined by the receiver station (MS),
  - and a parameter ( $\alpha$ ) of at least a determined first data symbol (D1) which is to be transmitted from the receiver station (MS) to the sending station (BS) by way of a second transmitting channel (C2) is adjusted as a function of the channel parameter (P) for the communication of the channel parameter (P) of the first transmitting channel (C1) to the sending station (BS).
2. Method according to Claim 1, whereby
  - the receiver station (MS) transmits the data symbol (D1) to the sending station (BS), and
  - the sending station (BS) ascertains the channel parameter (P) of the first transmitting channel (C1) on the basis of the at least one data symbol (D1) received.
3. Method according to one of the preceding claims, whereby the channel parameter (P) of the first transmitting channel (C1) is a phase parameter and/or an amplitude parameter.
4. Method according to one of the preceding claims, whereby the parameter ( $\alpha$ ) of the first data symbol (D1) to be transmitted from the receiver station (MS) to the sending station (BS) is changed by addition or subtraction of the value ( $\beta$ ) of the channel parameter (P) of the first transmitting channel (C1).

5. Method according to Claim 4, whereby in addition a parameter ( $\alpha$ ) of a second data symbol (D2) to be transmitted from the receiver station (MS) to the sending station (BS) is changed by means of an opposite mathematical operation when compared with the first data symbol (D1) by the value ( $\beta$ ) of the channel parameter (P) of the first transmitting channel (C1).

6. Method according to one of the preceding claims, whereby the data symbols (D1, D2) to be transmitted from the receiver station (MS), the parameter of said data symbols (D1, D2) being changed as a function of the channel parameter (P) of the first transmitting channel (C1), are pilot symbols.

7. Method according to one of Claims 1 to 5, whereby the data symbols (D1, D2) to be transmitted from the receiver station (MS), the parameter of said data symbols (D1, D2) being changed as a function of the channel parameter (P) of the first transmitting channel (C1), are user data.

8. Method according to one of the preceding claims, whereby a large number of first transmitting channels (C1) are present between the sending station (BS) and the receiver station (MS) and which is executed for each of these first transmitting channels (C1).

9. Method according to Claim 8, whereby

- the receiver station (MS) has a plurality of receiving antennas (AM) and/or the sending station (BS) has a plurality of sending antennas (AB), and
- one of the first transmitting channels (C1) is in each case situated between one of the sending antennas (AB) and one of the receiving antennas (AM).

10. Receiver station (MS) for a radio communication system
- having a unit (RM) for receiving a signal (S1) from a sending station (BS) by way of a first transmitting channel (C1),
  - having a unit (CE) for determining a channel parameter (P) of the first transmitting channel (C1),
  - and having a unit (PUM) for changing a parameter ( $\alpha$ ) of at least a determined data symbol (D1) which is to be transmitted from the receiver station (MS) to the sending station (BS) by way of a second transmitting channel (C2) as a function of the channel parameter (P) of the first transmitting channel (C1) for the communication of the channel parameter (P) to the sending station (BS).
11. Sending station (BS) for a radio communication system
- having a unit (TB) for sending a signal (S1) by way of a first transmitting channel (C1) to a receiver station (MS),
  - having a unit (RB) for receiving at least a determined data symbol (D1) from the receiver station (MS), whereby a parameter ( $\alpha$ ) of the data symbol (D1) is adjusted for communicating a channel parameter (P) of the first transmitting channel (C1) to the sending station (BS) as a function of the at least one channel parameter (P) of the first transmitting channel (C1),
  - and having a unit (PUB) for ascertaining the channel parameter (P) on the basis of the at least one data symbol (D1) received.